In the Claims

For the convenience of the Examiner, all pending claims of the present Application are shown below in numerical order whether or not an amendment has been made.

1.   (Original) A method for providing communications service during an upgrade of an optical communications ring formed from a plurality of nodes, each node operable to transmit and receive a first frame having a number of first time slots equal to N, wherein N is an integer and the first time slots are occupied by data, the method comprising:

upgrading a first node in the optical communications ring by increasing a data transmission rate of the first node to an increased rate, the first node coupled to a second node, the second node operable to transmit data at the data transmission rate;

at the increased rate, transmitting data in a second frame from the first node to the second node, the second frame having a number of second time slots equal to M, wherein M is an integer greater than N and the data occupies a number of the second time slots of the second frame equal to N;

providing at least one identifier to the second node, the at least one identifier identifying the occupied second time slots of the second frame;

receiving the second frame at the second node; and

detecting, at the second node, the data in the identified second time slots of the second frame according to the at least one identifier.

2.   (Original) The method of Claim 1, and further comprising;

after the transmission of the second frame, upgrading all of the nodes by increasing the data transmission rate of each node to the rate that is higher than the data transmission rate;

occupying, using data, all of a number of third time slots of a third frame, wherein the number of third time slots equals M;

directing the second node to ignore the at least one identifier; and

transmitting the third frame.

3.   (Original) The method of Claim 1, wherein data comprises payload data and redundancy data, and wherein the payload data occupies a first group of the second time slots designated for payload data and the redundancy data occupies a second group of the second time slots designated for redundancy data.

4.   (Original) The method of Claim 1, wherein M equals one hundred ninety two and N equals forty eight.

5.   (Original) The method of Claim 4, wherein the data transmission rate is approximately 2.5 gigabits per second and the increased rate is approximately 10 gigabits per second.

6.   (Original) The method of Claim 1, and further comprising:

generating a third frame at the second node, the third frame having a number of occupied time slots equal to N occupied by the detected data and no unoccupied time slots; and

transmitting the third frame to one of the nodes.

7.   (Original) The method of Claim 1, and further comprising:

setting a first data receipt rate of the upgraded first node to equal the data transmission rate of a non-upgraded node;

setting a second data receipt rate of the second node to equal the increased rate of the first node;

receiving, at the upgraded first node, the first frame at the first data receipt rate; and

wherein receiving the second frame at the second node comprises receiving the second frame at the second data receipt rate.

8. (Original) A method for providing communications service in a communications ring formed from a plurality of existing nodes each operable to transmit, at an existing rate, a first frame having a number of occupied time slots equal to N occupied by data, wherein N is an integer, the method comprising:

increasing the existing rate of a node to a higher rate, the node operable to transmit a second frame at the higher rate, the second frame having a higher number of time slots than the first frame;

occupying a number of the time slots of the second frame equal to N using data to be received by at least one of the existing nodes;

providing at least one identifier to the at least one of the existing nodes, the identifier identifying the occupied time slots of the second frame; and

transmitting the second frame of data to the at least one of the existing nodes.

9. (Original) The method of Claim 8, and further comprising:

receiving the second frame at the existing node; and

detecting, at the existing node, the data in the identified time slots of the second frame according to the at least one identifier.

10. (Original) The method of Claim 8, wherein the second frame has a number of the time slots equal to M, wherein M is an integer, and further comprising;

after the transmission of the second frame, upgrading all of the existing nodes by increasing the existing rate to the higher rate;

directing the at least one existing node to ignore the at least one identifier; and

transmitting another frame having a number of the time slots equal to M from an upgraded one of the existing nodes.

11. (Original) The method of Claim 8, wherein data comprises payload data and redundancy data, and wherein the payload data occupies a first group of the time slots designated for payload data and the redundancy data occupies a second group of the time slots designated for redundancy data.

12.   (Original)   The method of Claim 8, wherein the higher number of the time slots is equal to exactly one hundred ninety two time slots and N equals forty eight.

13.   (Original)   The method of Claim 12, wherein the existing rate is approximately 2.5 gigabits per second and the higher rate is approximately 10 gigabits per second.

14.   (Original) The method of Claim 8, and further comprising:

receiving the second frame at the existing node; and

detecting, at the existing node, the data in the identified time slots of the frame according to the at least one identifier;

generating another frame at the existing node, the another frame having fewer time slots than the second frame and a number of occupied time slots equal to N occupied by the detected data; and

transmitting the another frame to another one of the existing nodes at the existing rate.

15.   (Original) The method of Claim 8, wherein the data is divided into a plurality of categories, and the higher number of time slots are divided into a plurality of sections each corresponding to a particular one of the categories, and wherein each category of data occupies only a corresponding section of the time slots.

16.   (Original) A node for forming an optical communications ring that includes a plurality of existing nodes each operable to transmit, at an existing rate, a first frame having a number of occupied time slots equal to N occupied by data, wherein N is an integer, the node comprising:

a bit transmission unit operable to transmit a second frame to an existing node of the optical communications ring at a rate that is higher than the existing rate, the second frame having a higher number of time slots than the first frame; and

a switch unit coupled to the bit transmission unit, the switch unit operable to generate a pattern of data that fills a number of the time slots of the second frame equal to N and to send the pattern of data to the bit transmission unit.

17.   (Previously Presented) The node of Claim 31, wherein data comprises payload data and redundancy data, and the time slots are categorized into a payload data group and a redundancy data group, and wherein the switch unit is further operable to fill the payload data group with only the payload data and to fill the redundancy data group with only the redundancy data.

18.   (Previously Presented) The node of Claim 31, wherein the higher number of the time slots is equal to exactly one hundred ninety two time slots and N equals forty eight.

19.   (Original) The node of Claim 18, wherein the existing rate is approximately 2.5 gigabits per second and the rate is approximately 10 gigabits per second.

20.   (Previously Presented) The node of Claim 31, wherein the data is divided into a plurality of categories, and the time slots are divided into a plurality of sections each corresponding to a particular one of the categories, and wherein the switch unit is further operable to fill each section with only a corresponding one of the categories of data.

21.   (Previously Presented) The node of Claim 31, and further comprising a signaling unit coupled to the switch unit, the signaling unit operable to coordinate data frame transmission with the existing nodes using a protocol that aligns with the existing rate.

22.   (Previously Presented)   The node of Claim 31, wherein the bit transmission unit is a laser gun that is operable to transmit a pattern of light pulses that represents the second frame.

23.   (Original) A system for forming an optical communications ring, comprising:

a first node operable to transmit and receive a first frame at an existing rate, the first frame having a number of occupied time slots equal to N occupied by data, wherein N is an integer;

a second node coupled to the first node through optical fiber to form a bi-directional line switched ring, the second node comprising:

a bit transmission unit operable to transmit a second frame to the first node at a rate that is higher than the existing rate, the second frame having a higher number of time slots than the first frame; and

a switch unit coupled to the bit transmission unit, the switch unit operable to generate a pattern of data that fills a number of the time slots of the second frame equal to N and to send the pattern of data to the bit transmission unit;

wherein the first node comprises at least one identifier identifying the occupied time slots of the second frame.

24.   (Original) The system of Claim 23, wherein the first node is operable to receive the second frame and detect the data in the identified time slots of the second frame according to the at least one identifier.

25.   (Original) The system of Claim 23, wherein data comprises payload data and redundancy data, and the time slots are categorized into a payload data group and a redundancy data group, and wherein the switch unit is further operable to fill the payload data group with only the payload data and to fill the redundancy data group with only the redundancy data.

26.   (Original) The system of Claim 23, wherein the higher number of the time slots is equal to exactly one hundred ninety two time slots and N equals forty eight.

27.   (Original) The system of Claim 26, wherein the existing rate is approximately 2.5 gigabits per second and the rate is approximately 10 gigabits per second.

28.   (Original) The system of Claim 23, wherein the data is divided into a plurality
of categories, and the time slots are divided into a plurality of sections each corresponding to
a particular one of the categories, and wherein the switch unit is further operable to fill each
section with only a corresponding one of the categories of data.

29.   (Original)   The system of Claim 23, wherein the second node further
comprises a signaling unit coupled to the switch unit, the signaling unit operable to
coordinate data frame transmission with the existing nodes using a protocol that aligns with
the existing rate.

30.   (Original) The system of Claim 23, wherein the bit transmission unit is a laser
gun that is operable to transmit a pattern of light pulses that represents the pattern of data.

31.　　(Previously Submitted)　A node for forming an optical communications ring that includes a plurality of existing nodes each operable to transmit, at an existing rate, a first frame having a number of occupied time slots equal to N occupied by data, wherein N is an integer, the node comprising:

a bit transmission unit operable to transmit a second frame to an existing node of the optical communications ring at a rate that is higher than the existing rate, the second frame having a higher number of time slots than the first frame; and

a switch unit coupled to the bit transmission unit, the switch unit operable to generate a pattern of data that fills a number of the time slots of the second frame equal to N and to send the pattern of data to the bit transmission unit, wherein the existing node comprises at least one identifier identifying the occupied time slots of the second frame.

32.   (New)   The method of Claim 1, further comprising transmitting data in the first frame from the second node to the first node at the data transmission rate.

33.   (New)   The method of Claim 8, further comprising transmitting data in the first frame from a first existing node to a second existing node at the existing rate.